

Sm-141 (10.2m) CB+	Sm-142 (72.49m) ECB+	Sm-143 (8.75m) ECB+	Sm-144 (STABLE)	Sm-145 (340d)	Sm-146 (1.03E+8y) A	Sm-147 (1.060E11y) A	Sm-148 (7E+15y) A	Sm-149 (STABLE)
Pm-140 (2.2s) CB+	Pm-141 (20.90m) ECB+	Pm-142 (40.5s) ECB+	Pm-143 (2.1h) EC	Pm-144 (363d) EC	Pm-145 (1.7y) EC	Pm-146 (5.53y) ECB-	Pm-147 (2.6234y) B-	Pm-148 (5.368d) B-
Nd-139 (9.7m) CB+	Nd-140 (3.37d) EC	Nd-141 (2.49h) ECB+	Nd-142 (STABLE)	Nd-144 (2.29E+10y) A	Nd-145 (STABLE)	Nd-146 (STABLE)	Nd-147 (STABLE)	Nd-148 (10.96d) B-

PROMETHIUM-144

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pm-144
 Atomic number (Z): 61
 Mass number (A): 144
 Neutron number (N): 83

RADIOACTIVE DECAY

Decay modes: Electron capture
 Half-life: 363.0 [d]
 Decay constant: 2.2101×10^{-8} [1/s]
 Daughters: Nd-144 (100.0%)
 Radioactive daughters: Nd-144

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
 Mean electron energy: 0.01712 [MeV]
 Mean photon energy: 1.56311 [MeV]
 Air kerma rate constant, Γ_{10} : 6.047×10^{-17} [Gy·m²/Bq·s]
 Air kerma coefficient, K_{air} : 6.047×10^{-17} [Gy·m²/Bq·s]
 Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.743×10^{-15} [Gy·kg/Bq·s]
 Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

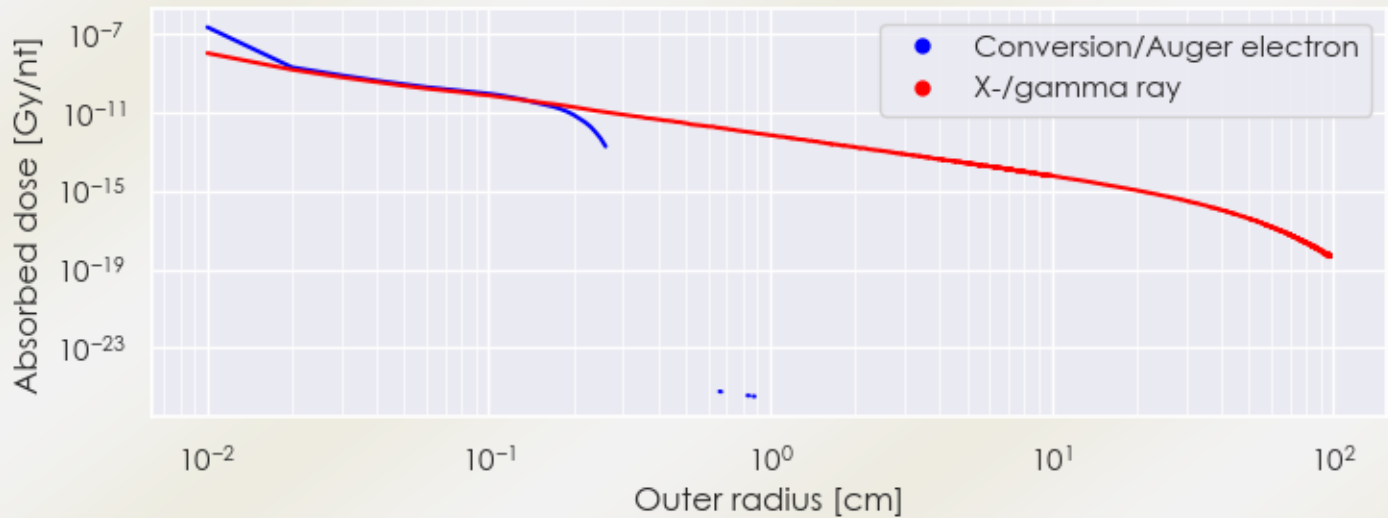
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-\beta^+,e^-}$: 2.743×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.504×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

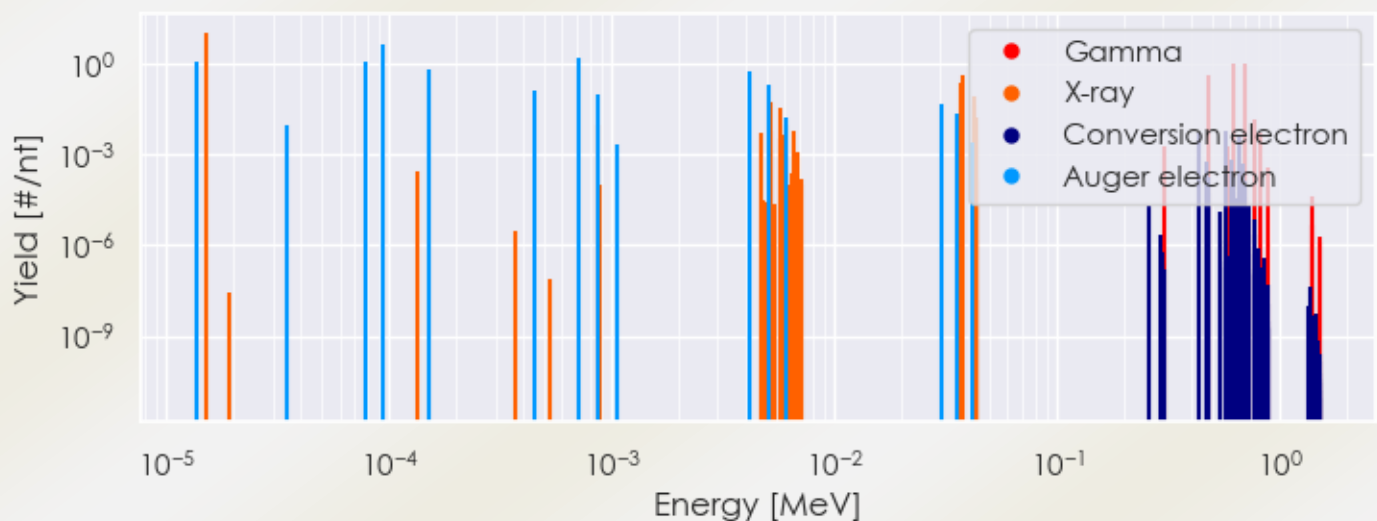
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pm-144 DPK.csv

SUMMARY SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pm-144 Summary Spectrum.csv

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Pm-144 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pm-144%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / n _t] if > 0.01	Radiation type
1.51991e-05	1.080e+01	X-ray
5.21638e-03	5.251e-02	X-ray
5.72010e-03	3.239e-02	X-ray
3.68696e-02	2.240e-01	X-ray
3.73962e-02	4.079e-01	X-ray
4.22041e-02	4.030e-02	X-ray
4.23100e-02	7.798e-02	X-ray
4.33673e-02	1.682e-02	X-ray
4.76780e-01	4.378e-01	Gamma
6.18010e-01	9.850e-01	Gamma
6.96490e-01	9.949e-01	Gamma
7.78570e-01	1.502e-02	Gamma
1.36628e-05	1.081e+00	Auger electron
7.82182e-05	1.099e+00	Auger electron
9.39631e-05	4.096e+00	Auger electron
1.51218e-04	6.325e-01	Auger electron
4.47123e-04	1.366e-01	Auger electron
7.10921e-04	1.445e+00	Auger electron
8.74027e-04	9.931e-02	Auger electron
4.14975e-03	5.481e-01	Auger electron
5.10106e-03	1.843e-01	Auger electron
6.08623e-03	1.532e-02	Auger electron
3.03768e-02	4.311e-02	Auger electron
3.58432e-02	2.068e-02	Auger electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6